APPENDIX L:

1st Marine Air Wing Messages

Appendix L1.

IMMEDIATE

~~C O N F I D E N T I A L~~

PT 00451
RTTCZYUW RUMLMHA0172 2561440 CCCC--RUSMSAA.
ZNY CCCCL
O P 131440Z SEP 70
FM CG FIRST MAW
TO AIG SEVEN SEVEN TWO TWO
INFO ZEN/MAG ONE SIX
BT
C O N F I D E N T I A L JPCCO
JOPREP JIFFY/FIRST MAW/OPREP-3/008
H. (C) MARINE CH-53D COMBAT LOSS.
H2. (U) 131200H SEP 1970.
HMH 463 ONE CH-53D, BUNO 156661 FROM MAG ONE SIX, FMAW
OPERATING FROM MARBLE MTN AF, RVN, WAS HIT BY SUSPECTED
ENEMY SMALL ARMS FIRE AND BURNED WHILE LANDING IN A
CLASSIFIED LZ FOR A TROOP EXTRACTION. CREW RECOVERED
SAFELY.
Z. (U) LAST REPORT THIS INCIDENT.
GP-4
BT
#0172

[illegible]

DECLASSIFIED
IN ACCORDANCE WITH EO 12958
BY SAF/AAZD
16 July 98 DATE
EB INITIAL

Appendix L2.

SECRET

VZCZCSVA856
ZTTSZYUW RUMLMHA0042 2570355-SSSS--RUSVBAA.
ZNY SSSSS
Z 0 1403552 SEP 70 FLASH
FM CG FIRST MAW
TO AIG SEVEN SEVEN TWO TWO
INFO ZEN/MAG ONE SIX
BT
S E [illegible]E/T/JPCCO/JOPREP JIFFY/PINNACLE/FIRST MAW/OPREP-3/SSO
H. (C) MARINE CH-53D COMBAT LOSS.
H1. (U) 002 SEP CH ONE.
H2. (U) 131200H SEP 70.
H4. (S) COMBAT LOSS OCCURRED AT COORDS YC500500.
Z. (U) LAST REPORT THIS INCIDENT.
CP-4
BT
0042

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IN ACCORDANCE WITH EO 12958
BY SAF/AAZD
15 JUL 98
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INITIAL

SECRET

Appendix L3.

~~SECRET~~

VZCZCSVA[illegible]
OTTSZYU UNCLAS[illegible] 270922-SSSS--RUSVBAA.
ZNY SSSSS
O P 1409227 SEP 70
FM CG FIRST MAW
TO AIG NINE ONE EIGHT
INFO RUHFA/CG XXIV CORPS
XMT HQ USARV
BT
S E C R E T
JOPREP JIFFY/FIRST MAW/OP-5/013/NVN-LAOS/DAILY STAT
A1. 013 SEP CH ONE.
ADD SECTION VI - RECAP
K. ACFT LOSS/DAMAGE
K1. AIRBORNE

	TYPE ACFT	BUNO	TYPE INCIDENT	CAUSE	FUNCTION	LOCATION	CREW STAT
K1A.	CH-53D	156661	CL	GRND FIRE	RECON	YD508000	R

Z. REMARKS
Z1. K1A. CH-53D, WAS HIT BY SUSPECTED ENEMY SMALL ARMS FIRE AND BURNED. CREW RECOVERED SAFELY.
CHANGE PARA Z1. TO Z2.
GP-4
ST
0137

C
RT 00
1440 111
SSC
CREEC
R

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15 JUL 98
DATE INITIAL

NMCN

~~SECRET~~

Appendix L4.

IMMEDIATE

[illegible]
A [redacted] L
[illegible]

PT [illegible]
DTTCZYUW [illegible]
ZNY CCCCC
O 161[illegible] SEP
FM CG FIRST MAW
TO AIG SEVEN SEVEN TWO TWO
INFO TEN/RAG ONE SIX
BT
C O N F I D E N T I A L [illegible] FIRST MAW/OPREP-[illegible]
1. (C) MARINE CH-53D COMBAT LOSS.
2. (U) 141445H SEP 1970.
3. (C) ONE CH-53D, BUNO 156665, [illegible] OPERATING
FROM MARBLE MTN AF, RVN, WHILE ON A TROOP EXTRACTION, WAS HIT
BY ENEMY GROUND FIRE AND WAS FORCED DOWN. CREW RECOVERED
SAFELY. ACFT DESTROYED IN PLACE BY FRIENDLY AIR.
4. (U) LAST REPORT THIS INCIDENT.
GP-4
BT
#0185
NNNN

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BY SAF/AAZD
15 JUL 98
DATE
INITIAL

IMMEDIATE

[illegible]
[redacted]
[illegible]

Appendix L5.

[redacted]

NNNNVZ CZ CSVB131
OTTSZYUW RUMLMHA0089 2530800-SSSS--RUSVBAA.
ZNY SSSSS
Z O 152300Z SEP 70
FM CG FIRST MAW
TO AIG SEVEN SEVEN TWO TWO
INFO MAG ONE SIX
S E C R E T /J P C C O
JOPREP JIFFY/PINNACIL/FIRST MAW/OPREP-3/011
H. (C) MARINE CH-53D COMBAT LOSS.
H1. (U) 010 SEP CH ONE.
H2. (U) 141445H SEP 1970.
H4. (S) COMBAT LOSS OCCURRED AT COORDS YB6390.
Z. (U) LAST REPORT THIS INCIDENT.
GP-4
BT
0089

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15 JUL 98 — DATE
INITIAL

7AF 2100/1 (10-67)

[redacted]

Appendix L6.

SECRET

PKRA0VZ CZ CSMC210
OTT SZ YUM RUMLMHA0169 258 12 15-SSSS--RUSVBAA.
ZNY SSSSS
O P 15 12 15Z SEP 70
FM CG FIRST MAW
TO AIG NINE ONE EIGHT
INFO RUMUHFA/CG XXIV CORPS
XMT HQ USARV
BT
S E C R E T
JOPREP JTFFY/FIRST MAW/OP-5/017/NVN-LAOS/DAILY
A1. 012 SEP CH ONE
SECTION V - RECAP, ADDITIONAL DATA

	TYPE ACFT	BUNO	TYPE INCIDENT	CAUSE	FUNCTION	LOCATION	CREW STAT
K1B.	AH-1G	157135	CD	LIMITED GRD FIRE	ARM HELO	YC5000	R
K1C.	AH-1G	165176	CD	LIMITED GRD FIRE	ARM HELO	YC5000	R
K1D.	AH-1G	817070	CD	LIMITED GRD FIRE	ARM HELO	YC5000	R
K1E.	AH-1G	817086	CD	LIMITED GRD FIRE	ARM HELO	YC5000	R
K1X.	CH-53D	156663	CD	LIMITED GRD FIRE	TRP INSERT	YC5000	R
K1G.	CH-53D	156661	CD	LIMITED GRD FIRE	TRP INSERT	YC5000	R
K1H.	CH-53D	156668	CD	LIMITED GRD FIRE	TRP INSERT	YC5000	R
K1I.	CH-53D	156665	CD	LIMITED GRD FIRE	TRP INSERT	YC5000	R

PAGE TWO RUMLMHA0169 S E C R E T
K1J. CH-53D 156955 CD LIMITED GRD FIRE TRP INSERT, YC5000 R
2. REMARKS, ADDITIONAL DATA.
22. K1G, AH-1G, HOLE IN LEFT SIDE PANEL ABOVE AMMO BAY DOOR, 4 HOLES IN AFT SIDE OF TAIL BOOM, HOLE IN TAIL ROTOR DRIVE SHAFT COVER, HOLE UNDERSIDE RIGHT INBOARD ROCKET POD, HOLE RIGHT SIDE ABOVE AMMO BAY DOOR, HOLE ON TOURET.
23. K1D, AH-1G, 1 HIT LEADING EDGE OF ROTOR BLADE, 1 HIT IN TOURET 1 HIT IN VERTICAL FIN.
24. K1D, AH-1G, 1 HIT RIGHT SIDE TAIL BOOM, 1 HIT LEFT SIDE TAIL BOOM, 1 HIT RIGHT SIDE OF TOURET, 2 HITS IN MAIN ROTOR BLADES.
25. K1E, AH-1G, 1 HIT RIGHT SIDE BELOW CO-PILOTS WINDOW, 1 HIT THRUGH SIDE OF ENGINE DOOR, 1 HIT RIGHT SIDE OF VERTICLE FIN, 10 HIT IN DRIVE SHAFT, HOLES IN BOTTOM OF BLADES.
26. K1F, CH-53D, RECEIVED SMALL ARMS FIRE ON APPROACH TO LZ ONE ROUND MAIN ROTOR BLADE.
27. K1G, CH-53D, RECEIVED SMALL ARMS FIRE ON FINAL TO LZ ONE ROUND MAIN ROTOR BLADE.
28. K1H, CH-53D, RECEIVED HEAVY SMALL ARMS FIRE ON APPROACH TO LZ 3 HITS, ONE IN TAIL ROTOR, ONE MAIN ROTOR, TWO IN BELLY OF A/C IN COMPART. ONE IN SCOOPIT FORWARD, ONE CAPS BARREL, ONE INSIDE CA

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Appendix L7.

SECRET

PAGE THREE RUHLMHA0169 S E C R E T
A/C.
Z9. KIT, CH-53D, RECEIVED IECE SMALL ARMS F BE ON FINAL .O LZ.
4 HITS: ONE IN MAIN ROTOR BLADE, ONE IN CABIN, ONE IN CAPS, ONE
IN ENGINE COWLING.
Z7i.UJIJ, CH-53D, RECEIVED SMALL ARMS FIRE ON APPROACH TO LZ. ONE
ROUND IN SPONSON.
RENUMBER PARA Z2 AS Z1
GP-4
BT
2169

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SECRET

Appendix L8.

SECRET

VZCZCSVB201
OETSZYUW RUMLMHA0171 2581230-SSSS-RUSVBAA.
ZNY SSSSS
O P 151230Z SEP 70
FM CG FIRST MAW
TO AIG NINE ONE EIGHT
INFO RUMUHFA/CG XXIV CORPS
XMT HQ USARV
BT
S E C R E T
JOPREP JIFFY/FIRST MAW/OP-5/015/NVN-LAOS/DAILY
A1. 015 SEP CH ONE.
SECTION III - SOUTH LAOS (ADDITIONAL AND CHANGE OF DATA)
M2. COMBAT SUPPORTY TYPE ACFT A-4E, CAS 4
CHANGE TOTAL TO READ 5 VICE 4; CHANGE TOTAL HRS TO READ 8.7 VICE 4.5
M5. SORTIES BY SL ZONE FUNCTION SL E
CAS 4
CHANGE TOTAL TO READ 5 VICE 4
ADD SECTION V - RECAP
K. ACFT LOSS/DAMAGE
K1. AIRBORNE

TYPE	TYPE	CREW

PAGE TWO RUMLMHA0171 S E C R E T

	ACFT	BUNO	INCIDENT	CAUSE	FUNCTION	LOCATION	STATUS
K1A.	CH-53D	156655	CL	GRD FIRE	TRP INSERT	YB6390	GW/R
K1B.	CH-53D	156578	CD LIMITED	GRD FIRE	TRP INSERT	YC5000	R
K1C.	CH-53D	156663	CD LIMITED	GRD FIRE	TRP INSERT	YC5000	R
K1D.	AH-1G	157000	CD MINOR	GRD FIRE	ARM HELO	YC5000	R

Z. REMARKS
Z1. K1A, CH-53D, DAMAGED BY GRD FIRE WHILE IN AND DEPARTING LZ. WHILE PROCEEDING ON SINGLE ENGINE THE SECOND ENGINE FAILED CAUSING AUTOROTATION TO VALLEY FLOOR. ACFT DESTROYED IN PLACE BY ARMY AH-1G.
Z2. K1B, CH-53D, TOOK TWO HITS, ONE ENTERED MAIN ROTOR TIP CAP, OTHER ENTERED CAB SECTION AND HIT TAIL ROTOR CONTROL CABLE.
Z3. K1C, CH-53D, TOOK TWO HITS, ONE IN AFT CABIN SECTION AND ONE LEFT INBOARD MAIN MOUNT.
Z4. K1D, AH-1G, FLYING GUNCOVER FOR TIMSE, TOOK ONE HIT IN 90 DEGREE GEAR BOX.
RENUMBER Z1. AS Z5.
BT-4
BT
0171

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SECRET

APPENDIX M:

Tear Gas Rockets

TEAR GAS ROCKETS

In June 1998, CNN received two munitions shipping documents from someone who had been at Tuy Hoa Air Base, South Vietnam, in January 1970 (see Attachments 3 and 4). Both documents described the same shipment of munitions from Tuy Hoa to Phu Cat Air Base, South Vietnam. The more detailed of these documents, a DD Form 1387-2 (Special Handling Data/Certification), specified 2.75-inch rockets with a chemical agent in the warhead—a chemical agent labeled "poison gas." This form appears to be a genuine product of the munitions shipping and inspection process used at Tuy Hoa Air Base and in the Air Force at large during 1970. The most likely rockets described in this incomplete way were XM-99 CS tear gas rockets newly developed by the Army to provide their helicopters with a capability for stand-off delivery of tear gas.

While millions of 2.75-inch rockets had been expended in Southeast Asia by all the services to deliver high explosives, flechettes and white phosphorus (for target marking), not before 1970 were any 2.75-inch rockets with gas warheads introduced into the theater. Although the Army's new XM99 rockets were still considered experimental in 1970, the Army was eager to deploy them (see Attachment 2,an excerpt from Sherman Davis's *Riot Control Weapons for the Vietnam War*, US Army Munitions Command, June 1970).

No 2.75-inch rockets with lethal gas warheads were developed by any of the US services (see Attachment 5). The Army did have 115 mm (more than 4 inches) M55 nerve gas rockets for use in the M91 multiple rocket launcher. Indeed in 1970 the Army intentionally sank 12,540 M55 nerve gas rockets in the Atlantic (see the *New York Times* articles in Appendix D). The Navy also had 5-inch nerve gas rockets that could be expended from multiple rocket launchers at sea.

For the most part, the entries on CNN's shipping documents are compatible with tear gas rockets. By regulation, shipments of tear gas were to carry the label "Poison Gas." Since the burster charges were included (38 pounds of explosive in a shipment of rockets weighing 6515 pounds), the shipment had to be labeled "Explosives Class A," that is any explosive that detonates—all bombs fall into this category. The presence of either Class A Explosive or tear gas was sufficient to merit a "Single Dagger" label prohibiting an

aircraft from carrying munitions and passengers together without the approval of the wing commander.

In at least one respect, however, this DD Form 1387-2 was filled out incorrectly. The form cites the wrong paragraph of the governing regulation, Air Force Manual 71-4, *Packaging and Handling of Dangerous Materials for Transportation by Military Aircraft.* The form received by CNN cites paragraph 10-19, which applied to lethal gas. That entry must be incorrect, because there were no 2.75-inch rockets with lethal gas warheads in existence anywhere in the US weapons inventory. If the 2.75-inch rockets described by the form were in fact the new Army tear gas rockets, the paragraph cited in AFM 71-4 should have been 10-21, which applied to Class C Poisons like tear gas rather than to Class A Poisons like nerve gas (see Attachment 6).

In the case of the DD Form 1387-2 in question, the signature block bears the name (but not the signature) of Staff Sergeant George T. Boyd of the 431st Munitions Maintenance Squadron at Tuy Hoa Air Base. Mr. Boyd has been out of the Air Force for a quarter century and does not remember this particular form or even this type of form (see the interview with Boyd in Appendix F). For the most part he filled out munitions inventory cards, while others in his branch did the munitions inspections. In any case, while Tuy Hoa received munitions shipments frequently, Boyd cannot recall many occasions when Tuy Hoa shipped munitions to other bases. If in fact Boyd did complete the form in question, it was a function to which he brought very little direct experience.

While he does not remember anything about DD Form 1387-2, George Boyd is confident that no nerve gas passed through Tuy Hoa while he was there. He feels sure that there would have been plenty of gossip in his munitions maintenance squadron about the special procedures and equipment necessary for handling nerve gas. Now that is the sort of thing one remembers for a quarter of a century.

The key fact about the 2.75-inch chemical rockets that apparently passed through Tuy Hoa Air Base in January 1970 is that they could not have been nerve gas rockets or lethal gas rockets of any kind, since such 2.75-inch rockets did not exist. They could have been 2.75-inch CS tear gas rockets.

INTERVIEW - MUNITIONS INSPECTION SERGEANT
31st TACTICAL FIGHTER WING

INTERVIEW: GEORGE T. BOYD (IN 1970, SSGT BOYD, USAF) by Wayne Thompson, AFHSO, 19 July 1998.

George Boyd served in the 431st Munitions Maintenance Squadron of the 31st Tactical Fighter Wing at Tuy Hoa Air Base, South Vietnam, from the spring of 1969 to the spring of 1970. He is confident that no nerve gas weapons were at Tuy Hoa while he was there. No special training was given the munitions maintenance personnel at Tuy Hoa; he observed no special handling equipment or procedures; there was no gossip about the presence of nerve gas. As to tear gas, his only recollection is of tear-gas grenades.

Boyd's job in the munitions inspection branch was to keep and update AFTO Form 15s (Ammunition Serviceability and Location Records); he also kept the technical orders up to date. The AFTO 15s were inventory cards about 5x8 inches or perhaps a little larger. There was a separate card for each lot of munitions received. He got much of his data about munitions movements from the munitions squadron's AFK supply branch, which handled all incoming and outgoing munitions shipments. The AFK people would consult Boyd about munitions availability and location; they would let him know when they moved any.

The other principal source of information for Boyd's inventory cards were the inspectors in his own branch (staff sergeants and below). When new shipments of munitions arrived at Tuy Hoa, an inspector from Boyd's office would go to the storage area where the munitions had been unloaded and open a few of the crates to verify that the munitions were what they were supposed to be and were in good condition. One corner of a crate that had been opened was painted white to indicate that it should be expended before the others. Boyd rarely participated in inspections; he would receive from the inspector some sort of form to use in making entries on the inventory cards. When all the munitions on an inventory card had been expended, the card was moved to a dead file and kept for a year before being destroyed.

Most of the munitions received at Tuy Hoa were expended by the fighter wing there. Shipment of munitions from Tuy Hoa to another base was infrequent. Boyd's recollection is that an inspector would visit a pallet of munitions to

be shipped, but he was uncertain whether any inspection form was prepared to accompany the shipment.

I described the January 1970 DD Form 1387-2 (Special Handling Data/Certification) received from CNN with his name typed in the signature block. Boyd said that he had been called three times in June 1998 by a woman from CNN with a British accent, and that he had told her repeatedly that he had no recollection of the form.

I read to Boyd the CNN description (by Brian Barger) of the 24 January 1970 arrival of 2.75-inch chemical rockets at Tuy Hoa and their quick departure. He said that amphibious transporters did often bring munitions and other cargo from an Army facility a few miles to the south (where munitions and other supplies came in by sea). He was a little skeptical that anyone would have been pulled out of a warehouse at 2 am to build a munitions pallet and load it on a C-130, because there was a 24-hour crew on the flight line to handle such duties.

Appendix M1.

[redacted]

400

RIOT CONTROL WEAPONS FOR THE VIETNAM WAR

Page 36 & 37

275 in KRT
IN VIETNAM
OPERATION;
ENSURE

Sherman L. Davis

Historical Monograph AMC 56M

June 1970

Edgewood Arsenal
U. S. Army Munitions Command
Edgewood Arsenal, Maryland

[redacted]

Appendix M2.

CONTENTS

Appendix M3.

[redacted]

CHAPTER 4

[redacted] CONCLUSION

(U) The CS weapons described in the preceding chapters were representative of the effort to provide the forces in Vietnam with a riot control agent tactical capability in the 1966- 1969 period. The list of items mentioned therein is not exhaustive, however. Several field expedients were put into use from time to time to utilize CS with whatever means were available. A lightweight commercial agricultural duster-sprayer with a 450 cubic foot/minute axial-flow blower was adopted for military use as the M106 disperser and employed in blowing CS into tunnel complexes. Nicknamed Mity Mite (it weighed less than 40 pounds including fuel and 8 pounds of CS) it was standardized in 1965 at the outset of the period of riot control agent use in tactics and saw extensive use in the field.[68]

[redacted] Other CS weapons were still being developed for Vietnam use as the 1960's ended. Chief of these were two rocket warheads, one for aerial and one for ground employment. The aerial rocket began as a standard full-cycle development project in 1966 to meet a Qualitative Materiel Requirement for a tactical CS munition deliverable by Army aircraft at a stand-off distance. Feasibility studies by contractors led to the conclusion that a CS warhead for the 2.75-inch Folding Fin Airborne Rocket system (FFAR) would meet the requirement. The warhead was planned as a container for submunitions to provide multi-source area coverage capability; it had to function in flight by means of a relatively sophisticated remote setting electronic time fuzing system. As designed it consisted of a frangible aluminum outer shell carrying 32 CS canisters (XM100) arranged around a central steel tube. The expelling charge in the tube functioned upon fuze activation, breaking the warhead shell to disperse the submunitions. Development of the 2.75-inch warhead, designated XM80, proceeded through the late 1960's, with type classification estimated as attainable by the end of 1971 at the normal development pace. Early in 1969, however, actions were initiated to provide a version of the XM80 rocket to the Vietnam theater under the ENSURE program so as to bypass some of the remaining development schedule in the interest of rapid delivery to the field. The

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[68] (1) AMCTC Item 3935, 16 Dec 65. (2) Ltr, HQ, 1st Air Cav Div to a member of Faculty, USA Chl Center and School, 19 May 66.

[redacted]

Appendix M4.

[redacted]

ENSURE requirement was validated on 25 April 1969, and the schedule worked out in consequence called for shipment to the theater of an operational evaluation quantity within eight months after the initiation of the program.[69]

(C) The ENSURE schedule could not be met by the XM80 rocket as it stood; the developers intended to satisfy the requirement by simplifying certain features, especially the fuzing system. A less sophisticated base ejection fuze and actuating system for the warhead was decided upon, and the weapon thus constituted was redesignated XM99. The required base ejection fuze was already available as an Air Force item. Contracts for production of 10,540 XM99 warheads for SITP tests and ENSURE needs were awarded in September 1969. First Article tests of the contractor's production, conducted at the end of 1969, indicated the need for redesign of the warhead casing to strengthen skin thickness. This involved some delay in the commencement of SITP testing, which did not get under way until the late winter of 1970. Delivery of the operational evaluation quantity of 10,000 XM99 warheads to Vietnam was not probable before the end of the following summer. Meanwhile the development of the original XM80 warhead was suspended, pending evaluation of the capabilities of the XM99.[70]

(C) A shoulder-fired CS rocket warhead entered the development scene late in 1968 in consequence of the successful adaptation of the LAW (lightweight antitank weapon) high explosive rocket system – a modern version of the bazooka, with a multi-shot capability – to the use of a new flame warhead. The prospect of producing a CS-loaded warhead for the same XM191 four-barrel rocket system resulted in an ENSURE requirement being formulated before the end of 1968. Once in development, some time was lost in determining an optimum ballistic CS match for the existing flame round. The first assumption was that a steel warhead casing would be desirable, but by mid-1969 tests had shown that an aluminum warhead had better performance characteristics. The design of this XM96 rocket system (the weapon had originally been designated XM74 in 1968) was sufficiently

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[69] (1) AMCTC Items 5491, 13 Jan 67; 5889, 13 Feb 68. (2) R&A, EA, 3d Qu FY 69, p. 12; 4th Qu FY 69, p. 12.

[70] R&A, EA, 1st Qtr FY 70, p. 12; 2d Qu FY 70, p. 12.

[redacted]

Appendix M5.

established by the summer of 1969 for procurement efforts to be initiated. Procurement of an initial lot for SITP tests and operational evaluation to meet the ENSURE requirement began late in 1969, with First Article testing scheduled early in 1970.[71]

(U) Thus, as the decade of the 1960's came to an end, the effort to provide CS weapons systems for battlefield use begun in 1963 was still moving forward. Beginning with hand grenades and portable blowers, the means of agent dissemination provided to the field had progressed through improvised bombs and cartridge projectors to airborne linear dispensers and CS shells, with CS rockets in the offing. The development of CS2, with its capacity for effective secondary aerosolization after deposit, had contributed to the effectiveness of terrain restriction and tunnel denial techniques. The effort as a whole, marked by widely varying rates of progress, had succeeded in introducing and maintaining CS as a battlefield factor in Vietnam, the first time in half a century that a chemical irritant had figured as a significant tactical element in an active theater of war.

(U) Begun at a time when CS was not admitted to the battlefield, the development of CS weaponry proceeded at the traditional measured pace of military research and development during its first two years. The change of policy that late in 1965 brought CS into demand as a tactical weapon coincided almost exactly with the Army's ENSURE program to bypass standard development procedures to get new materiel into the theater of operations at the earliest practical moment. Within a year the first examples of CS tactical weapons had gone overseas; by the end of 1967 a number of new devices had been introduced to the field and units were becoming accustomed to the possession and use of CS materiel.

(U) As might be expected with weapons rapidly designed and produced, the new items often displayed shortcomings. Some of these, like the problems of component quality experienced in assembling the E24 Handy Andy cartridge, were familiar production difficulties encountered repeatedly in munitions manufacture. Others, like the excessive weight of the E8 launcher, or the unsatisfactory test performance of the XM7 canister, represented defects in design or engineering. In such cases the need for haste militated against the development of a completely

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[71] (1) R&A, EA, 2d Qtr FY 69, p. 13; 3d Qtr FY 69, p. 13; 4th Qtr FY 69, p. 12; 2d Qtr FY 70, p. 13. (2) Presentation, CDL Antcom, WDEL, to EA Commander's Conference, 23 Apr 69

Appendix M6.

satisfactory munition. This was not unexpected; nevertheless the general level of results achieved by the end of 1969 was impressive. Within four years from the first demand from the theater, roughly a dozen CS weapons had been put into the field, not one of which had existed as a production item at the outset of the period. Most of them were being produced and shipped in large quantities and were in regular use on the battlefield.

(C) In entering the battlefield as a tactical factor, CS was meant to accomplish the following objectives:

1. Force the enemy into the open, exposing him to other munitions.
2. Disorganize enemy assaults.
3. Neutralize enemy defenses and suppress enemy fire against opposing assaulting forces.
4. Restrict enemy use of terrain, tunnel complexes, and other installations.
5. Permit use of selective munitions in populated or built-up areas to accomplish military objectives with minimum civilian casualties or destruction of property.

(U) Achievement of these objectives depended not only on the availability of CS munitions but also on their intelligent use, including allowing for peculiarities of weather or terrain and assuring proper exploitation of the agent's effects. The readiness of friendly forces to take immediate advantage of the temporary disorientation in an enemy unit upon contact with CS would often be a decisive factor in determining the success of a CS mission. The fact that the war in Vietnam so often involved contact with lightly-equipped irregular forces was another important factor, for these guerrilla units were not likely to have adequate eye and respiratory protection available when exposed to CS. Conversely possession of gas masks by friendly forces was essential if they were to use CS in combat. Frequent failure on the part of American troops to carry the relatively heavy M17 gas mask into the field tended to restrict utilization of CS at first; the outfitting of units with the new lightweight XM28 mask in 1969 was expected to increase the opportunities for use of CS weaponry.[72]

(U) In practice the record would seem to show that the new weapons were effectively employed. As a means of clearing villages before or during assault with a minimum of casualties, both aerial and ground employment

[72] Draft, Riot Control and Incapacitating Chemical Agents (CB Weapons and Defense Technical Data Source Book, Vol. I Part B), Deseret Test Center, Apr 69, pp. 97 – 100

Appendix M7.

of CS gave positive results in most cases reported, with the targets being secured and enemy forces driven off or captured. Equally positive results were recorded for CS as a weapon in position defense, again with employment of either airborne or ground dissemination. The use of CS in attacking fortified positions such as bunkers or enemy base camps also seemed to be generally successful in forcing evacuation of positions or suppressing enemy fire during assault. The most frequent use of CS was in some form of terrain restriction, including contamination of base camps, agricultural or storage sites, river crossings, infiltration routes, and tunnel complexes. In this employment CS was used in a manner recalling the persistent contaminants of World War I tactics. Tunnel denial procedures, as reported, were effective in somewhat over half the cases cited; it was difficult to assess the actual effectiveness of other terrain restriction techniques. Where specific results were reported, they were generally positive. Successful use of CS weapons in clearing suspected enemy positions or hidden troop concentration points was also reported.[73]

(U) One uniform factor testifying to the battlefield utility of CS weaponry was the demand, which consistently outran supply. Evaluation lots of new ENSURE CS items were quickly exhausted in operational use and rapid resupply was usually sought. Available stocks of CS weapons were carefully rationed, and field expedients for the dissemination of the agent when weapons were in short supply (or not yet developed) were universally resorted to. Over 3000 tons of the agent itself were procured in the United States during the first three years (1966–69) of its wide-scale use. There seems to be good reason to assume that from the point of view of the troops themselves the program to devise tactical systems for CS was well conceived.[74]

(U) It would be reasonable to conclude, therefore, that the concept of bringing a riot control agent into the battlefield had been successfully realized, at least in the special circumstances of the war in Vietnam. Such a conclusion would not overlook the many delays, the individual design failures, the sometimes haphazard use concepts, and the supply difficulties which accompanied the CS program to a greater or lesser degree throughout its course. Nevertheless the new weapons had contributed materially to

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[73] Ibid, pp. 188–197

[74] Ibid, pp. 197–198

Appendix M8.

American tactics in the field, expanding the resources of troops in both counter-insurgency and conventional battlefield situations, and exploiting the inferiority of the enemy in defensive and retaliatory capabilities. The effective use in warfare of an agent which in itself could not produce casualties could not have been inferred from the example or the doctrines of the past, in which lethality had been a major criterion of success in a weapon. But the prediction of the first Water Bucket test report in 1963 that a riot control agent could be a true tactical weapon if properly employed was borne out in the test of battle during the same decade. It is worth noting that the concept could be propounded, accepted, and embodied in new weaponry, and that these weapons could be produced and successfully employed in a distant and difficult theater of war, all within five years or so. Such an accomplishment might properly be termed a success. The value which may ultimately be accorded to CS and its weapons systems in the prosecution of the war in Vietnam, or in warfare generally, awaits a future reckoning.

41

Appendix M9.

SPECIAL HANDLING DATA/CERTIF... AFM 71-4 Jan 10-19 Pg 10-19

TRANSPORTATION CONTROL NUMBER: FK5282 0019 0090 XX

DESTINATION: PHU CAT AB RVN

NOMENCLATURE OF ITEM: WARHEAD, 2.75" ROCKET CHEMICAL AGENT
DOT CLASS: EXPLOSIVES CLASS "A"
DOT LABEL: POISON GAS

NET EXPLOSIVE WEIGHT: 38.10

GROSS WEIGHT: 6515

HANDLING INSTRUCTIONS

PROPERTIES: TOXIC AND EXPLOSIVE HAZARD

STORAGE & HANDLING: Must be labeled with "POISON GAS" label and with name of contents.

WATER MAY BE USED TO FIGHT FIRE

L/S GROUP: •

SHIPPER CERTIFICATION: This is to CERTIFY that the contents of the packages in this shipment are properly described by name and are packed, marked, and in proper condition for transportation in accordance with:

[X] SUBPARAGRAPH 10-19d, AFM 71-4, TM 9-250, NAVWEPS 15-03-500 AND MCO P4030.19

[ ] OFFICIAL AIR TRANSPORT RESTRICTED ARTICLE TARIFF 6, CAB NO. 82

[ ] OTHER (Specify) SINGLE DAGGER - NO PAX

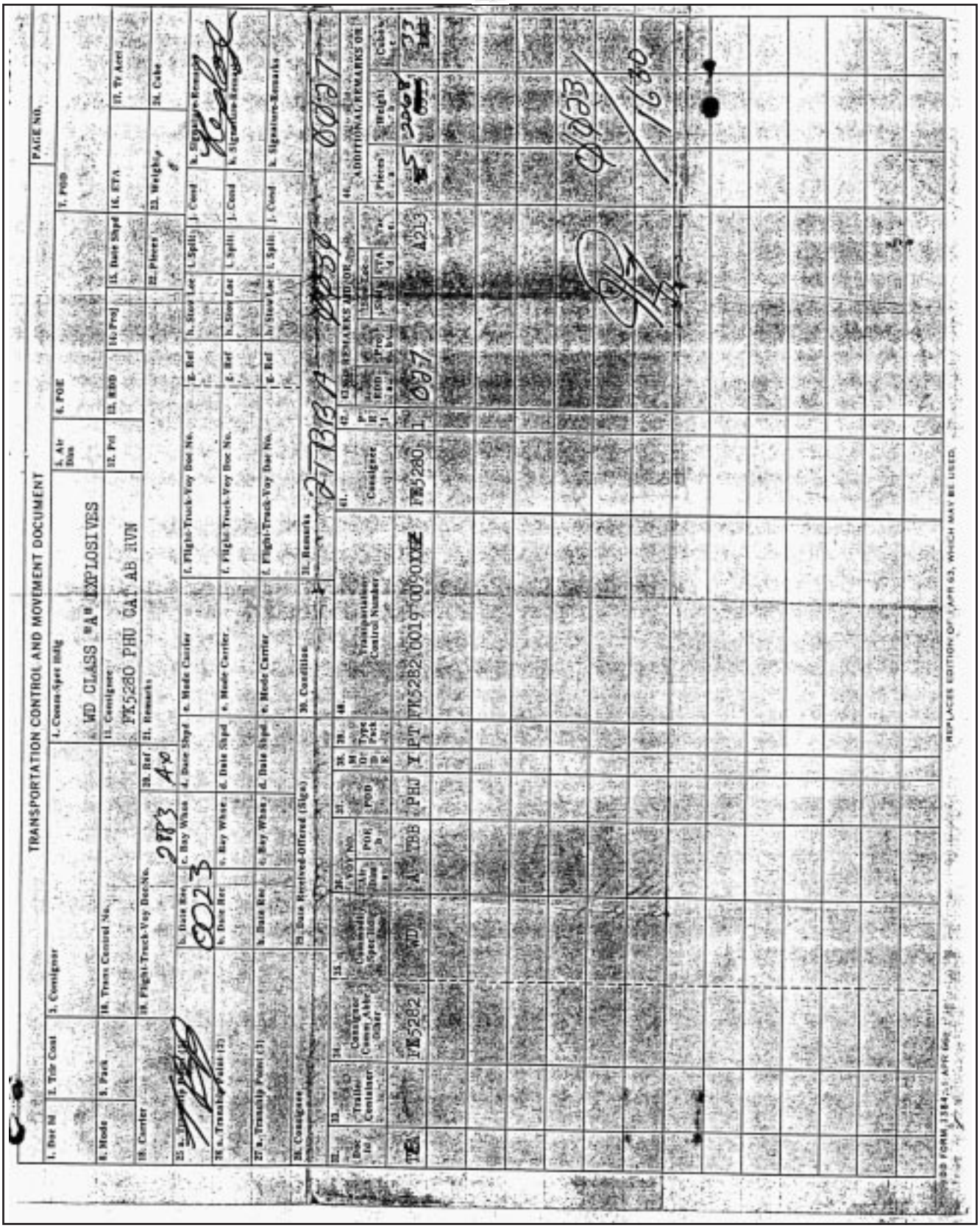
[ ] SHIPMENT WITHIN XXXXXXX CARGO AIRCRAFT LIMITATIONS

SIGNATURE: GEORGE T. BOYD SSGT 431MMS Inspection Section

DATE: 23 Jan 70

DD FORM 1387-2, 1 APR 66 — REPLACES EDITION OF 1 APR 65, WHICH MAY BE USED.

Appendix M10.



Appendix M11.

AMSCB-CG

16 July 1998

MEMORANDUM FOR: Commanding General, U.S. Army Materiel Command, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001

SUBJECT: CNN Allegation of Toxic Chemical Agent Use in Vietnam

1. In reference to the latest CNN allegation of toxic chemical agent use in Vietnam, a review of our historical information failed to locate any records specifically relating to the label or incident described by the veterans to CNN.

2. Our research indicates that the 2.75-inch rockets used in Vietnam had the following types of warheads: high explosive (to include HEAT), white phosphorus, CS riot control agent, smoke, or flechettes. There is no indication that 2.75-inch rockets were filled with nerve agent (or any other toxic chemical agent) and shipped to Vietnam. There are contemporary reports that indicate the Army did not use toxic chemical agents in the war.

3. The following information might be pertinent to this investigation. About 4,000 XM99 2.75-inch CS rockets were shipped to Vietnam starting in 1970. The rocket was referred to as a "Chemical Agent Rocket" and was designated for use with the UH-1D (Huey), AH-1G (Huey Cobra), and the AH-56A (Cheyenne) helicopters. In one photograph of a wooden shipping container, the top was marked: "Rocket Ammunition, With Gas Projectiles, Class A Explosive." The Department of Transportation (DOT) hazard classification for this rocket was "Explosive Class B, Poison, C."

4. The handling procedures for CS-filled munitions in 1970 were extremely similar to those for toxic chemical munitions. Handling procedures required protective masks, protective clothing, and rubber gloves. In addition, it was recommended to have a M12A1 Decontamination Apparatus and a M9 Decontamination Apparatus nearby. Pilots and copilots of aircraft with CS onboard were advised to wear protective masks. All other personnel in the aircraft were advised to have protective masks as well.

5. The POC for this information is Mr. Jeffery K. Smart, AMSCB-CIH, DSN 584-4430.

/s/

JOHN C. DOESBURG
Major General, USA
Commanding

Appendix M12.

~~AFM 71-4~~
~~DSAM 4145.8~~/TM 38-250/~~NAVAIR 16-03-500/MCO P4030.19~~

AIR FORCE MANUAL
NO. 71-4
DSAM 4145.8
TM 38-250
NAVAIR 16-03-500
MCO P4030.19

DEPARTMENTS OF THE AIR FORCE,
THE ARMY, THE NAVY, AND
DEFENSE SUPPLY AGENCY
Washington, 29 May 1968

Packaging and Materials Handling

PACKAGING AND HANDLING OF DANGEROUS MATERIALS FOR TRANSPORTATION BY MILITARY AIRCRAFT

This manual provides instructions for preparing explosives and other dangerous materials for shipment by military aircraft. These instructions are intended to assure that such materials, when offered for shipment, are packaged, packed, marked, labeled, and properly prepared for transportation. These instructions are applicable to preparation and shipment by DOD agencies and/or other Government agencies and contractors shipping for such agencies by military aircraft, of explosives and other dangerous materials except Nuclear Weapons and their associated equipment covered by separate Joint Atomic Weapons publications. The term "hazardous" will not be used at any time to describe the dangerous cargo referred to in this manual. Changes to this manual will be processed orderly. Publication of coordinated changes will be published in loose-leaf form.

[See summary of revised, deleted, or added material on last page below signature element.]

Contents

This manual supersedes AFM 71-4, TM 38-250, NAVWEPS 15-03-500, and MCO P4030.19, 15 November 1965.

PR: AFSTPN
DISTRIBUTION (Page 12-28)

Appendix M13.

Appendix M14.

Appendix M15.

ounds gross, outside containers must comply with DOT Specification 12B—except must be 1-piece type, of double-wall corrugated fiberboard at least 400-pound test with all three facings at least 135-pound test, 65 pounds gross for others.

(d) Fiberboard boxes, DOT Specification 12D, with inside containers that must be: Glass or earthenware not over 1-gallon or 5-pound capacity each; authorized for not more than 75 pounds gross weight; not to contain more than 4 such inside containers if their capacity is greater than 5 pints each.

(e) Wooden boxes, DOT Specifications 15A, 15B, 15C, 16A, or 19A, with glass or earthenware inside containers not over 1-gallon or 5-pound capacity each, except that inside containers up to 3 gallons or 15-pound capacity each are authorized when only 1 is packed in each outside container; or with metal inside container not over 10-gallon capacity each.

(f) Wooden boxes, DOT Specifications 15A, 15B, or 15C, with metal inside liners, DOT Specification 2F, not over pounds total capacity each.

(g) Metal drums (single-trip), DOT Specifications 17E or 17H.

(h) Metal drums (single trip), DOT Specifications 37A or 37B.

(i) Aluminum drums, DOT Specifications 42B or 42C.

(j) Fiberboard boxes, DOT Specification 12A, with inside glass, polyethylene, or other nonfragile plastic bottles not over 5-pound capacity each. Not more than 4 inside bottles shall be packed in one outside container. Completed package prepared for shipment must be capable of standing a 4-foot drop on solid concrete without breakage or leakage of contents.

(k) Fiber drums, DOT Specification 21C, with not more than one inside metal container, DOT Specification 2A, having a maximum net weight of 60 pounds.

(2) In tightly closed inside glass, earthenware, polyethylene or other nonfragile plastic bottles or jars not over 1 pound capacity each or inside metal containers not over 5 pounds capacity each. Inside containers must be securely cushioned to prevent breakage in outside wooden boxes, barrels or kegs, or fiberboard boxes. Net contents in one fiberboard box shall not exceed 65 pounds; and not more than 100 pounds in a wooden box, barrel or keg.

10–19. †Chemical Ammunition (Containing Class A Poisons, Liquids or Gases):

a. *Properties.* Toxic and explosive hazard.

b. *Storage and Handling.* For the purpose of storage, chemical munitions are divided into 4 groups according to the nature of fillings. Whenever possible, each kind of chemical munition should be stored separately. Chemical munitions should receive maximum preferential handling. The same materials handling equipment used for high explosive munitions may be used for chemical munitions. When stored outdoors, chemical munitions should be covered with tarpaulins and stacked to permit free circulation of air. Stored munitions should be inspected monthly for unusual or unsatisfactory conditions. (See paragraph 10–4.)

c. *Packaging:*

(1) Must be prepared for air shipment in accordance with technical directives of the service involved.

(2) In strong wooden or metal containers approved by the military agencies.

(3) When packed or assembled with ignition elements, bursting charges, detonating fuzes or explosive components, refer to paragraph 5–20.

d. *Marking.* Must be labeled with "Poison Gas" label and marked "Nonexplosive" and with the name of contents.

10–20. †Chemical Ammunition (Containing Class B Poisons, Liquids or Gases:)

a. *Properties.* Toxic and explosive hazard.

Appendix M16.

b. *Storage and Handling.* For the purpose of storage, chemical munitions are divided into 4 groups, according to the nature of fillings. When possible, each kind of chemical munition should be stored separately. Chemical munitions should receive maximum preferential handling. The same materials handling equipment used for high explosive munitions may be used for chemical munitions. When stored outdoors, chemical munitions should be covered with tarpaulins and stacked to permit free circulation of air. Stored munitions should be inspected monthly for unusual or unsatisfactory conditions. (See paragraph 10–4.)

c. *Packaging:*

(1) In strong wooden or metal containers approved by the military agencies.

(2) When packed or assembled with ignition elements, bursting charges, detonating fuzes or explosive components, refer to paragraph 5–20.

d. *Marking.* Must be labeled as prescribed for Class B poison gases, liquids, or chemicals contained therein and marked with the name of the contents.

10–21. †Chemical Ammunition (Containing Class C Poisons, Liquids or Solids):

a. *Properties.* Toxic and explosive hazard.

b. *Storage and Handling.* For storage purposes, chemical munitions are divided into 4 groups according to the nature of fillings. When possible, each kind of chemical munition should be stored separately. Chemical munitions should receive maximum preferential handling. The same materials handling equipment used for high explosive munitions may be used for chemical munitions. When stored outdoors, chemical munitions should be covered with tarpaulins and stacked to permit free air circulation. Stored munitions should be inspected monthly for unusual or unsatisfactory conditions. (See paragraph 10–4.)

c. *Packaging:*

(1) In strong wooden or metal containers approved by the military agencies.

(2) When packed or assembled with ignition elements, bursting charges, detonating fuzes or explosive components, refer to paragraph 5–20.

d. *Marking.* Must be labeled as prescribed for class C gases, liquids, or chemicals contained therein, and marked with the name of contents.

10–22. †Cyanide of Potassium, Liquid and †Cyanide of Sodium, Liquid:

a. *Properties.* Both are very poisonous liquids.

b. *Storage and Handling.* Store in a cool dry place with good ventilation. Containers should be kept tightly closed, and personnel should be cautioned to avoid inhalation of the vapors or fumes of these materials. If personnel are going to be exposed to these materials for long periods, protective equipment should be used. This equipment should include chemical safety goggles, respirator, and protective clothing.

c. *Packaging.* Must be packed in specification containers as follows:

(1) Metal drums, DOT Specification 5, 5A, or 5B, without galvanizing inside, with openings not exceeding 2.3 inches in diameter.

(2) Wooden boxes, DOT Specifications 15A, 15B, 15C, 16A, or 19A, with inside glass or earthenware containers not over 1 gallon capacity each, or inside metal containers not over 10 gallons capacity each, and without galvanizing.

10–23. Poison Gases and Liquids not Specifically Provided for:

†Arsine
†Cyanogen Chloride (Containing less than 0.9 percent Water)
†Cyanogen Gas
†Diphenylcyanoarsine